No. 8600014

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Jacob Hartz Seed Co., Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'Hartz 6130'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington, D. C. *this* 30th *day of* June *in the year of our Lord one thousand nine hundred and* eighty-six.

Attest:

Kenneth [illegible]
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Richard E. Lyng
Secretary of Agriculture

APPROVAL EXPIRES 4-30-86

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

FORM APPROVED: OMB NO. 0581-0055

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

1. NAME OF APPLICANT(S)	2. TEMPORARY DESIGNATION	3. VARIETY NAME
JACOB HARTZ SEED COMPANY, INC.	H79-7817	HARTZ 6130

4. ADDRESS *(Street and No. or R.F.D. No., City, State, and Zip Code)*	5. PHONE *(Include area code)*	FOR OFFICIAL USE ONLY
P.O. BOX 946 / NORTH PARK AVE. STUTTGART , AR 72160	(501)673-8565	PVPO NUMBER 8600014

6. GENUS AND SPECIES NAME	7. FAMILY NAME *(Botanical)*	FILING
GLYCINE MAX	LEGUMINOSEA	DATE 10/30/85 TIME 12:00 ☐ A.M. ☒ P.M.

8. KIND NAME	9. DATE OF DETERMINATION	FEES RECEIVED
SOYBEAN	JANUARY 1983	AMOUNT FOR FILING $1,800 DATE 10/24/85 AMOUNT FOR CERTIFICATE $ 200. DATE 5-8-86

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION *(Corporation, partnership, association, etc.)*

CORPORATION

11. IF INCORPORATED, GIVE STATE OF INCORPORATION	12. DATE OF INCORPORATION
DELAWARE	1984

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS

JACOB HARTZ SEED COMPANY, INC.
P.O. BOX 946
STUTTGART, AR 72160

PHONE *(Include area code)*:

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED

a. ☒ Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*
b. ☒ Exhibit B, Novelty Statement.
c. ☒ Exhibit C, Objective Description of Variety *(Request form from Plant Variety Protection Office.)*
d. ☒ Exhibit D, Additional Description of Variety.
e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act.)* ☐ Yes *(If "Yes," answer items 16 and 17 below)* ☒ No

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?	17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☐ Yes ☐ No	☐ Foundation ☐ Registered ☐ Certified

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?

☐ Yes *(If "Yes," give date)*

☒ No

19. HAS THE VARIETY BEEN RELEASED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES ?

UNITED STATES SPRING 1985

☒ Yes *(If "Yes," give names of countries and dates)*

☐ No

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT	DATE
Curtis Williams Director of Research	October 17, 1985
SIGNATURE OF APPLICANT	DATE
M. O. Lambuth Vice Pres	10-17-85

FORM WA-470 (7-84) (Edition of 3-84 is obsolete.)

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EXHIBIT A

ORIGIN AND BREEDING HISTORY OF THE VARIETY

'Hartz 6130' was developed by Hartz Seed Company from the cross 'Bedford' x F1 ('Centennial' x X37-3-16). X37-3-16 is a race 4 cyst nematode resistant selection made at the University of Arkansas from the cross R72-2647(2) x F1(D68-18 X PI 88.788). The cross from which Hartz 6130 was selected was made at Stuttgart in 1976. Seed were advanced by the modified single seed descent method to F5. An F6 single plant row, number 7817, was harvested in bulk and the line given the experimental number H79-7817.

Hartz 6130 was screened for reaction to bacterial pustule under natural conditions at Stuttgart. It was screened for reaction to races 1,3,4 and 7 of Phytophthora megasperma f.sp. glycinea, to races 3 and 4 of the soybean cyst nematode and to the reniform nematode in the greenhouse at Stuttgart. Reaction to Meloidogyne incognita was determined in a naturally infested field at Keo, Arkansas. Reaction to Meloidogyne arenaria and M. javanica was conducted in greenhouse tests at the University of Georgia and in field tests by the University of Florida.

Hartz 6130 has been yield tested in Hartz Seed Company tests since 1980 and in various State Experiment Station official yield trials in the Southern United States since 1982.

Evidence of Stability: Hartz 6130 breeds true for flower color, pubescence color, maturity date, pod wall color, hilum color, reaction to phytophthora root rot, cyst nematode, root-knot nematode, reniform nematode and bacterial pustule.

Kinds of Variants: Hartz 6130 has about 0.1% of the hila that have a faded or grayish black color which is apparently environmentally induced. Other hilum and flower colors may occur in a frequency up to 4 seeds per pound.

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EXHIBIT B

NOVELTY STATEMENT

Hartz 6130 is a determinent early Maturity Group VI cultivar with purple flowers, tawny pubescence and tan pod walls at maturity. Seeds have shiny yellow coats, yellow cotyledons and black hila. It has a high level of resistance to races 3 and 4 of the soybean cyst nematode, three species of root-knot nematode (M. incognita, M. arenaria, and M. javanica), and bacterial pustule. It is moderately resistant to the reniform nematode. Hartz 6130 does not have a major gene conferring race specific resistance to phytophthora root-knot. However, plant growth and vigor has been good when grown on heavy clay soils known to be infested with phytophthora. It is susceptible to an undetermined race of frogeye leafspot. Plant type is intermediate. Leaflets are trifoliate, ovate, medium dark green and medium in size.

Hartz 6130 can be distinguished from other Maturity Group VI cultivars by a combination of morphological and disease reaction characteristics.

Most similar variety: Hartz 6130 is most similar to Bedford. However, Hartz 6130 matures 7-10 days later than Bedford.

FORM APPROVED: OMB NO. 0581-0055

EXHIBIT C
(Soybean)

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, MEAT, GRAIN & SEED DIVISION
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MARYLAND 20705

OBJECTIVE DESCRIPTION OF VARIETY
SOYBEAN (Glycine max L.)

NAME OF APPLICANT(S)	TEMPORARY DESIGNATION	VARIETY NAME
JACOB HARTZ SEED COMPANY, INC.	H79-7817	HARTZ 6130

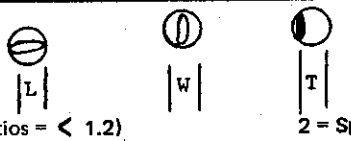
ADDRESS *(Street and No., or R.F.D. No., City, State, and Zip Code)*
P.O. BOX 946
STUTTGART, AR 72160

FOR OFFICIAL USE ONLY
PVPO NUMBER
8600014

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g., [0][9]).

1. SEED SHAPE:

[2]



1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)
2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)
3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)
4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

2. SEED COAT COLOR: (Mature Seed)

[1] 1 = Yellow 2 = Green 3 = Brown 4 = Black 5 = Other *(Specify)* _____

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

[2] 1 = Dull ('Corsoy 79'; 'Braxton') 2 = Shiny ('Nebsoy'; 'Gasoy 17')

4. SEED SIZE: (Mature Seed)

[1][2] Grams per 100 seeds

5. HILUM COLOR: (Mature Seed)

[6] 1 = Buff 2 = Yellow 3 = Brown 4 = Gray 5 = Imperfect Black 6 = Black 7 = Other *(Specify)* _____

6. COTYLEDON COLOR: (Mature Seed)

[1] 1 = Yellow 2 = Green

7. SEED PROTEIN PEROXIDASE ACTIVITY:

[ ] 1 = Low 2 = High

8. SEED PROTEIN ELECTROPHORETIC BAND:

[ ] 1 = Type A ($SP1^a$) 2 = Type B ($SP1^b$)

9. HYPOCOTYL COLOR:

[3] 1 = Green only ('Evans'; 'Davis') 2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')
3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')
4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

10. LEAFLET SHAPE:

[3] 1 = Lanceolate 2 = Oval 3 = Ovate 4 = Other *(Specify)* _____

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11. LEAFLET SIZE:

[2] 1 = Small ('Amsoy 71'; 'A5312') 2 = Medium ('Corsoy 79'; 'Gasoy 17') 3 = Large ('Crawford'; 'Tracy')

12. LEAF COLOR:

[2] 1 = Light Green ('Weber'; 'York') 2 = Medium Green ('Corsoy 79'; 'Braxton') 3 = Dark Green ('Gnome'; 'Tracy')

13. FLOWER COLOR:

[2] 1 = White 2 = Purple 3 = White with purple throat

14. POD COLOR:

[1] 1 = Tan 2 = Brown 3 = Black

15. PLANT PUBESCENCE COLOR:

[2] 1 = Gray 2 = Brown (Tawny)

16. PLANT TYPES:

[2] 1 = Slender ('Essex'; 'Amsoy 71') 2 = Intermediate ('Amcor'; 'Braxton') 3 = Bushy ('Gnome'; 'Govan')

17. PLANT HABIT:

[1] 1 = Determinate ('Gnome'; 'Braxton') 2 = Semi-Determinate ('Will') 3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

18. MATURITY GROUP:

[0][9] 1 = 000 2 = 00 3 = 0 4 = I 5 = II 6 = III 7 = IV 8 = V 9 = VI 10 = VII 11 = VIII 12 = IX 13 = X

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

BACTERIAL DISEASES:

[2] Bacterial Pustule *(Xanthomonas phaseoli* var. *sojensis)*

[0] Bacterial Blight *(Pseudomonas glycinea)*

[0] Wildfire *(Pseudomonas tabaci)*

FUNGAL DISEASES:

[1] Brown Spot *(Septoria glycines)*

Frogeye Leaf Spot *(Cercospora sojina)*

[-] Race 1 [-] Race 2 [-] Race 3 [-] Race 4 [-] Race 5 [1] Other *(Specify)* RACE UNIDENTIFIED

[0] Target Spot *(Corynespora cassiicola)*

[0] Downy Mildew *(Peronospora trifoliorum* var. *manshurica)*

[2] Powdery Mildew *(Microsphaera diffusa)*

[0] Brown Stem Rot *(Cephalosporium gregatum)*

[ ] Stem Canker *(Diaporthe phaseolorum* var. *caulivora)*

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19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

FUNGAL DISEASES: (Continued)

[0] Pod and Stem Blight *(Diaporthe phaseolorum* var; *sojae)*

[0] Purple Seed Stain *(Cercospora kikuchii)*

[0] Rhizoctonia Root Rot *(Rhizoctonia solani)*

Phytophthora Rot *(Phytophthora megasperma* var. *sojae)*

[1] Race 1 [0] Race 2 [1] Race 3 [1] Race 4 [0] Race 5 [0] Race 6 [1] Race 7

[0] Race 8 [0] Race 9 [ ] Other *(Specify)* _____

VIRAL DISEASES:

[0] Bud Blight (Tobacco Ringspot Virus)

[0] Yellow Mosaic (Bean Yellow Mosaic Virus)

[0] Cowpea Mosaic (Cowpea Chlorotic Virus)

[0] Pod Mottle (Bean Pod Mottle Virus)

[0] Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

Soybean Cyst Nematode *(Heterodera glycines)*

[0] Race 1 [0] Race 2 [2] Race 3 [2] Race 4 [ ] Other *(Specify)* _____

[0] Lance Nematode *(Hoplolaimus Colombus)*

[2] Southern Root Knot Nematode *(Meloidogyne incognita)*

[0] Northern Root Knot Nematode *(Meloidogyne Hapla)*

[2] Peanut Root Knot Nematode *(Meloidogyne arenaria)*

[2] Reniform Nematode *(Rotylenchulus reniformis)*

[2] OTHER DISEASE NOT ON FORM *(Specify):* Meloidogyne javanica

20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

[0] Iron Chlorosis on Calcareous Soil

[ ] Other *(Specify)* _____

21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

[0] Mexican Bean Beetle *(Epilachna varivestis)*

[0] Potato Leaf Hopper *(Empoasca fabae)*

[ ] Other *(Specify)* _____

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape		Seed Coat Luster	
Leaf Shape		Seed Size	
Leaf Color		Seed Shape	
Leaf Size		Seedling Pigmentation	

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23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS x	NO. SEEDS/ POD
				CM Width	CM Length	% Protein	% Oil		
HARTZ 6130 Submitted	OCT * 15	1.8 *	104 *			41.2 +	21.1 +	12.0	2-3
BEDFORD Name of Similar Variety	OCT 6	2.2	107			39.8	21.2	11.9	2-3

PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A_2 in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.

* 1980-84 average at Stuttgart

\+ Average of 10 locations

x Average 18 locations

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EXHIBIT D

TABLE 1: Selected characteristics of Maturity Group VI Soybean cultivars that are resistant to cyst nematode races 3 and 4

VARIETY	FLOWER[1] COLOR	POD WALL[2] COLOR	HILUM[3] COLOR	PHYTOPHTHORA[4] ROOT-KNOT
HARTZ 6130	P	T	BL	T
ASGROW 6242	P	BN	BL	T
ASGROW 6520	P	T	BL	R
JEFF	P	T	BN	T
LEFLORE	P	T	BL	R
BRADLEY	W	T	BL	R

1. P =Purple W =White
2. T =Tan BN=Brown
3. BL=Black BN=Brown
4. T =Tolerant R =Resistant (race specific)

TABLE 2: Comparison of Hartz 6130 and Bedford soybeans for Maturity, Plant Height, and Lodging at Stuttgart, 1980-1984.

VARIETY	MATURITY	PLANT HEIGHT, IN.	LODGING 1/
HARTZ 6130	Oct. 15	41	1.8
BEDFORD	Oct. 06	42	2.2

1/ 1 = no lodging, 5 = all plants down

TABLE 3: Reaction of Hartz 6130, Mack and Centennial soybeans to Meloidogyne incognita in a Greenhouse Test at Stuttgart, 1984

VARIETY	LARVAE PER ROOT SYSTEM 1/	ROOT-GALL INDEX 2/
HARTZ 6130	28.7	0.8
MACK	174.6	3.7
CENTENNIAL	21.3	1.0
L.S.D. .05	12.8	

1/ Mean of 10 replications. Soil was sterilized, then 2,450 larvae per 250 cc of soil was added. Test was evaluated after 45 days.

2/ 0 = no galls; 1 = 1.5% of roots galled; 2 = 6.25% of roots galled; 3 = 26-50% of roots galled; 4 = 50-100% of roots galled; 5 = plants killed.

TABLE 4: Reaction of Hartz 6130, Forrest and Bedford soybeans to cyst nematode race 4 in a Greenhouse Test at Stuttgart, 1984 1/

VARIETY	CYSTS PER ROOT SYSTEM
HARTZ 6130	3.3
FORREST	8.0
BEDFORD	3.9
L.S.D. .05	1.7

1/ Seeds planted into infested soil containing 17 cysts and 560 larvae per 250 cc of soil. Test evaluated after 30 days. Data was transformed by square root method before analysis.

TABLE 5: Reaction of Hartz 6130, Forrest and Ransom soybeans to reniform nematode in a Greenhouse test at Stuttgart, 1983. 1/

VARIETY	EGGS PER ROOT SYSTEM
HARTZ 6130	9.7
FORREST	9.7
RANSOM	35.5
L.S.D. .05	4.4

1/ Seeds planted into infested soil containing 5,040 larvae per 250 cc. Data was transformed by square root method before analysis. Test evaluated after 36 days.

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EXHIBIT E

BASIS OF APPLICANTS OWNERSHIP

Jacob Hartz Seed Company, Incorporated, Stuttgart, Arkansas established a Plant Breeding Program in 1972 for the purpose of developing, releasing, and maintaining stocks of soybean varieties developed by its Plant Breeding Program.

Dr. Curtis Williams, Plant Breeder, was licensed to breed soybeans by the Arkansas State Plant Board, December 9, 1977. Dr. Williams and co-workers developed and tested this variety in trials at Stuttgart, Arkansas.

On April 23, 1983, Jacob Hartz Seed Company, Inc., was purchased by HybriTech Seed International, Inc., a wholly owned subsidiary of Monsanto, St, Louis, Missouri. Jacob Hartz Seed Company, Inc. was originally incorporated in 1948 in the State of Arkansas. In 1984 Jacob Hartz Seed Company, Inc. merged with the Monsanto-West Africa, Inc., a Delaware corporation. Jacob Hartz Seed Company, Inc., is the present name of the merged corporation which is a Delaware corporation.